CLAIMS

What is claimed is:

1. In a plasma processing system, a method of minimizing the differences in an etch rate of a photo resist material in different regions of a substrate, comprising:

introducing said substrate having in sequential order thereon, an underlying layer and said photo-resist layer;

flowing said etchant gas mixture into a plasma reactor of said plasma processing system, said etchant gas mixture comprising a flow of a fluorine containing gas between about 0.1% and about 10% of said etchant gas mixture;

striking a plasma from said gas mixture;

etching said photo-resist layer with said plasma; and,

removing said substrate from said plasma reactor.

2. The method of claim 1, wherein said etchant gas mixture further comprises flow of oxygen gas.

3. The method of claim 1, wherein said etchant gas mixture further comprises flow of nitrogen gas.

4. The method of claim 1, wherein said flow of a fluorine containing gas is between about 0.1% and about 5% of said etchant gas mixture.

5. The method of claim 1, wherein said flow of a fluorine containing gas is between about 1% and about 2% of said etchant gas mixture.

6. The method of claim 1, wherein said flow of a fluorine containing gas is CF_4.

7. The method of claim 1, wherein said flow of a fluorine containing gas is CHF_3

8. The method of claim 1, wherein said flow of a fluorine containing gas is CH_2F_2.

9. The method of claim 1, wherein said flow of a fluorine containing gas is CH_3F.

10. The method of claim 1, wherein said flow of a fluorine containing gas is C_2F_2.

11. The method of claim 1, wherein said substrate is semiconductor wafer.

12. The method of claim 1, wherein substrate is a glass panel.

13. In a plasma processing system, an apparatus for minimizing the differences in an etch rate of a photo resist material in different regions of a substrate, comprising:

a means of introducing a substrate having in sequential order thereon, an underlying layer and said photo-resist layer;

a means of flowing said etchant gas mixture into a plasma reactor of said plasma processing system, said etchant gas mixture comprising a flow of a fluorine containing gas between about 0.1% and about 10% of said etchant gas mixture;

a means of striking a plasma from said gas mixture;

a means of etching said photo-resist layer with said plasma; and,

a means of removing said substrate from said plasma reactor.

14. The apparatus of claim 13, wherein said etchant gas mixture further comprises flow of oxygen gas.

15. The apparatus of claim 13, wherein said etchant gas mixture further comprises flow of nitrogen gas.

16. The apparatus of claim 13, wherein said flow of a fluorine containing gas is between about 0.1% and about 5% of said etchant gas mixture.

17. The apparatus of claim 13, wherein said flow of a fluorine containing gas is between about 1% and about 2% of said etchant gas mixture.

18. The apparatus of claim 13, wherein said flow of a fluorine containing gas is CF_4.

19. The apparatus of claim 13, wherein said flow of a fluorine containing gas is CHF_3

20. The apparatus of claim 13, wherein said flow of a fluorine containing gas is CH_2F_2.

21. The apparatus of claim 13, wherein said flow of a fluorine containing gas is CH_3F.

22. The apparatus of claim 13, wherein said flow of a fluorine containing gas is C_2F_2.

23. The apparatus of claim 13, wherein said substrate is semiconductor wafer.

24. The apparatus of claim 13, wherein substrate is a glass panel.